ORIGINAL

SANDRA D. KENNEDY



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BOB STUMP

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BRENDA BURNS

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26 27 **COMMISSIONERS** GARY PIERCE, Chairman

BEFORE THE ARIZONA

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DOCKET CONTROL

Anzona Corporation Commission DOCKETED

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DOCKET NO. E-01461A-08-0430

ORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF TRICO ELECTRIC COOPERATIVE, INC., AN ARIZONA NONPROFIT CORPORATION, FOR A PERMANENT RATE INCREASE, FOR A DETERMINATION OF THE FAIR VALUE OF THE CORPORATION'S ELECTRIC SYSTEM FOR RATEMAKING PURPOSES, FOR A FINDING OF A JUST AND REASONABLE RATE OF RETURN THEREON, AND FOR APPROVAL OF RATE SCHEDULES DESIGNED TO DEVELOP SUCH RETURN.

NOTICE OF FILING COMPLIANCE

Decision No. 71230 (August 6, 2009) requires Trico Electric Cooperative, Inc. ("Trico") to file its report on demand side management ("DSM") program expenses semi-annually on April 1st for the period July through December. Accordingly, Trico files its semi-annual DSM report dated April 1, 2012.

RESPECTFULLY SUBMITTED this 30th day of March 2012.

Jason D. Gellman

ROSHKA DEWULF & PATTEN, PLC.

One Arizona Center

400 East Van Buren Street, Suite 800

Phoenix, Arizona 85004

Attorneys for Trico Electric Cooperative, Inc.

1	Original and thirteen copies of the foregoing filed this 30 th day of March 2012, with:
2	med this 30 day of March 2012, with.
3	Docket Control ARIZONA CORPORATION COMMISSION
4	1200 West Washington Street Phoenix, Arizona 85007
5	,
6	Copy of the foregoing hand-delivered this 30 th day of March 2011 to:
7	Brian Bozzo
8	Compliance Manger, Utilities Division
9	ARIZONA CORPORATION COMMISSION 1200 West Washington Street
10	Phoenix, Arizona 85007
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Demand Side Management Plan Decision 71230 Approved August 06, 2009 Semi-Annual Report April 1, 2012

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Trico Electric Cooperative, Inc. Demand Side Management Plan Semi-Annual Report

BACKGROUND

Trico Electric Cooperative, Inc. (Trico) filed an application, Docket # E-01461A-08-0430, with the Arizona Corporation Commission which included approval to implement a new Demand Side Management ("DSM") portfolio and collect the costs for its existing programs through a Commission-approved DSM Adjustor mechanism. Decision # 68073 authorized Trico to employ a DSM adjustor mechanism to recover the costs of pre-approved DSM programs.

Details of the DSM portfolio included a request for the approval of the following DSM programs as part of its rate application:

- a. Member Service Representative ("MSR") Energy Training Workshop
- b. Conservation Workshop Program
- c. Classroom Connections
- d. Residential Home Energy Audits
- e. Non-Residential Energy Audits
- f. Operation Cool Shade
- g. Pima County Weatherization

In the <u>FINDINGS OF FACT</u>, the Commission Staff submitted the following recommendations:

- a. Staff recommended that Trico establish thorough monitoring and evaluation measures, including survey and the collection of participant data to verify the Classroom Connection program effects.
- b. Staff recommended that the Non-Residential Energy Audit and Residential Home Energy Audit Programs be consolidated into one Energy Audit Program and be approved with the following condition: (1) the Conservation Workshops and MSR Training be incorporated in the Energy Audit Program; (2) comprehensive monitoring and evaluation techniques be developed and employed; and (3) to be sure that DSM conservation funds are well spent, the Energy Audit Programs should be approved as a two-year pilot program, at the end of which period, Trico would submit an all-inclusive report detailing the results of its energy audits.
- c. Results from Staff's analysis of the Operation Cool Shade Tree Planting Program showed a benefit/cost ratio of 2.9, which indicates that the benefits are greater than the costs. That the program be

approved with the following conditions: the program should provide participants with information emphasizing the energy savings that result from planting trees to shade buildings; the tree species must be appropriate for the area; the direction the trees face must be appropriate for shading the building; the distance between the tree and the building must be appropriate for the maximum benefit; south wall plantings must be deciduous trees to allow for winter heating effects; information must be available about safely pruning trees to decrease winter shading, tree maintenance and the removal of ground debris to reduce fire danger; members are provided up to four trees per home or business if it can be determined that there are enough resources to provide the additional trees without creating a shortage for other participants; the monitoring and evaluation process include the development of data concerning tree maintenance costs, tree mortality and kW/kWh savings; and the program be reported in the Cooperative's DSM report.

d. Pima County Weatherization staff analysis showed a benefit/cost ratio of 0.97, indicated that the benefits are nearly equal to the costs. Staff's analysis does not include the benefits of reduced environmental effects, however, and Staff believes that if these societal benefits were quantified and incorporated into Staff's analysis, the benefit/cost ratio would be greater that one.

In its Decision # 71230, dated August 6, 2009, the Arizona Corporation Commission ordered that Trico Electric Cooperative, Inc. shall:

- Recover the costs of Commission-approved DSM costs through its DSM Adjustor.
- Commission-approved DSM costs should be assessed to all Trico's customers as a clearly labeled single line item per kWh charge on the customer bills.
- Trico shall file its report on DSM program expenses semi-annually on April 1st for the period July through December and October 1st for the period January through June.
- Trico initial DSM adjustor rate is \$0.000191356 per kWh, until further Order of the Commission.

Trico is submitting this semi-annual report for the period beginning July 1, 2011 through December 31, 2011.

Trico's approved Demand Side Management (DSM) portfolio consists of four parts: Energy Audits, Classroom Connection, Operation Cool Shade and Pima County Weatherization.

Overall DSM Portfolio One Year Goal

Estimated Annual DSM	Estimated Annual DSM Demand and Energy Savings			
DSM Program	Units/yr	kWh/yr saved	kW/yr saved	
Energy Audit Program				
MSR Training / Telephone Energy Audits	4500	764,288	196.20	
The Conservation Workshop Program	200	33,968	8.73	
Residential Home Energy Audits	104	207,349	53.31	
Non-Residential Energy Audits	5	111,172	28.58	
Classroom Connection	400	40,426	10.39	
Operation Cool Shade Program	1,500	558,000	225.00	
Pima County Weatherization Program	2	2,134	0.55	

DSM Portfolio Progress

July through December 2011 DSM	July through December 2011 DSM Demand and Energy Savings Progress			
DSM Program	Units/yr	kWh/yr saved	kW/yr saved	
Energy Audit Program				
MSR Training / Telephone Energy Audits	192	32,610	8.38	
The Conservation Workshop Program	25	4,246	1.09	
Residential Home Energy Audits	4	7,975	2.05	
Non-Residential Energy Audits	3	66,703	17.15	
Classroom Connection	400	40,426	10.39	
Operation Cool Shade Program	1585	90,032	36.22	
Pima County Weatherization Program	5	5,335	0.42	

DSM Portfolio by Customer Segment

DSM Program	Customer Segment
Classroom Connections	Residential
Energy Audit	
MSR Training	Residential
Conservation Workshops	Residential
Residential Home Energy Audits	Residential
Non-Residential Energy Audits	Non-Residential
Operation Cool Shade	Residential & Non-Residential
Pima County Weatherization	Residential

DSM PORTFOLIO OVERVIEW

A. ENERGY AUDIT PROGRAM

Description

Trico's Energy Audit Program is divided into four segments for administration, implementation and evaluation purposes: MSR Training, Conservation Workshops, Residential Energy Audits, and Non-Residential Energy Audits. Each is described below.

1.) Member Service Representative Training / Telephone Energy Audits

The MSR training program consists of a seven-hour workshop, which teaches Trico's Member Service Representatives (MSR) advanced energy-savings techniques, thus enabling the MSRs to better assist Trico members in using energy more efficiently.

The workshop teaches MSRs how to conduct detailed telephone surveys of a customer's electricity usage, including the size of the home, the number and size of appliances in the home, as well as the size and type of heating, ventilation and cooling used in the home. The MSR also learns how to review the Member's daily habits and appliance operation. The MSR is then taught how to take this information and use it to make recommendations that will result in the member using less energy on a day-to-day basis.

2.) Conservation Workshops

The Conservation Workshop Program is an outreach program that teaches homeowners ways to conserve energy and be more energy efficient.

Trico conducts energy efficiency presentations at meetings of homeowners associations, community groups and Trico's headquarters. In addition, Trico actively seeks meetings and events where they can address Trico members.

3.) Residential Home Energy Audits

On-site residential home energy audits are conducted for those members who have participated in the telephone home energy audits and who still have questions. Trico representatives are scheduled to go to the Member's home as required, and at a minimum:

- Conduct an analysis of the home's thermal envelope
- Survey the electric appliances
- Review the living habits of all occupants
- Make the appropriate recommendations based on the results of the audit

 Distribute several pieces of energy efficiency-related materials for the Member to review

4.) Non-Residential Audits

Non-Residential Energy Audits are available upon request from Trico's Commercial and Industrial customers. The audit includes at a minimum:

- Site survey
- Load profile analysis
- Study of historical usage
- Identification of when and where energy is consumed within the facility
- Compilation of a comprehensive report reviewed with the member
 - o The report includes recommendations in the areas of technology and best practices that will improve the energy efficiency of electric equipment at the facility, which may include replacing inefficient equipment and improving the building envelope

Predetermined Energy Audit Program Goals, Objectives and Savings

Target

Predetermined Estimated DSM Ar	nual Demand ar	nd Energy Savings	Goals
DSM Program	Units/yr	kWh/yr saved	kW/yr saved
Energy Audit Program			
MSR Training / Telephone Energy Audits	4500	764,288	196.20
The Conservation Workshop Program	200	33,968	8.73
Residential Home Energy Audits	104	207,349	53.31
Non-Residential Energy Audits	5	111,172	28.58

Level of Customer Participation

DSM Program	Number of Customer Participants
Energy Audit Program	
MSR Training / Telephone Energy Audits	192
The Conservation Workshop Program	25
Residential Home Energy Audits	4
Non-Residential Energy Audits	3

Costs

DSM Program	Admin	Implement	Rebates	Monitoring
Energy Audit Program				
MSR Training / Telephone Energy Audits	\$4,168	\$14,967	0	0
The Conservation Workshop Program	\$235	\$102	0	0
Residential Home Energy Audits	\$67	\$1,287	0	0
Non-Residential Energy Audits	\$128	\$502	0	0
Total	\$4,598	\$16,858	0	0

* Evaluation and Monitoring Activities

DSM Program	Units	Surveyed	Consumption Analysis
Energy Audit Program			
MSR Training / Telephone Energy Audits	192	0	0
The Conservation Workshop Program	25	0	0
Residential Home Energy Audits	4	0	0
Non-Residential Energy Audits	3	0	0

Savings

DSM Program	Units	kWh saved	kW saved
Energy Audit Program			
MSR Training / Telephone Energy Audits	192	32,610	8.38
The Conservation Workshop Program	25	4,246	1.09
Residential Home Energy Audits	4	7,975	2.05
Non-Residential Energy Audits	3	66,703	17.15

Benefits and Net Benefits in Dollars

DSM Program	kW Benefit	kWh Benefit	\$ Benefit
Energy Audit Program			
MSR Training / Telephone Energy	8.38	32,610	\$1,892
Audits			
The Conservation Workshop Program	1.09	4,246	\$246
Residential Home Energy Audits	2.05	7,975	\$463
Non-Residential Energy Audits	17.15	66,703	\$3,870

Program-specific Performance Incentive Calculations

DSM Program	Performance Incentive Calculations
Energy Audit Program	No Performance Incentive for this program
MSR Training / Telephone Energy Audits	
The Conservation Workshop Program	
Residential Home Energy Audits	
Non-Residential Energy Audits	

Problems Encountered and Proposed Solutions

DSM Program	Problems & Solutions
Energy Audit Program	
MSR Training / Telephone Energy Audits	Problem: Low Participation on Telephone Energy Audits Solution: Proactively call high energy users to offer an Audit
The Conservation Workshop Program	No problems
Residential Home Energy Audits	Problem: Low Participation Solution: Referrals, Sign-up Sheets at Conservation Workshops
Non-Residential Energy Audits	No problems

Program Modifications

DSM Program	Modifications
Energy Audit Program	
MSR Training / Telephone Energy Audits	Begin proactively contacting Members who have high energy usage to offer to conduct a telephone audit
The Conservation Workshop Program	
Residential Home Energy Audits	
Non-Residential Energy Audits	

Program Terminations

DSM Program	Terminations		
Energy Audit Program	None at this time		
MSR Training / Telephone Energy Audits			
The Conservation Workshop Program			
Residential Home Energy Audits			
Non-Residential Energy Audits			

*See note below in regard to the Evaluation and Monitoring Activities for the Energy Audit Program:

Monitoring the demand and energy output of the participants households receiving an audit, survey and recommendations can lead to imperfect results. The participants may implement any or all of the measures that they learn but the outcome may not show a savings. Additional appliances or resizing of replacement appliances in the home during the monitoring period may result in no net savings. Therefore, it may be necessary to use assumptions to estimate the savings realized from reliable studies. The method of estimating the savings the residential retrofit per-unit is derived from ORNL Evaluation, June 2005. An

adjustment factor of 0.50 to the retrofit number is applied, based on the conservative assumption that only half of the recommend measures would be installed. This yields a savings coefficient of 1.99 kW per audited project.

The approach to developing a residential sector energy-savings multiplier was to select four common energy conservation measures that could easily be taught in workshops and training sessions: reset water heater thermostats; install low-flow showerhead and insulate water heater pipes; install compact fluorescent light bulbs and programmable thermostats. Assuming an installation rate of 0.20, to reflect the findings from three studies indicating that roughly 20% of those attending workshops and similar types of training or education sessions actually change their behavior in the intended manner as a result of their experience (Reed et al.1999; Peters and McRae 2001; Tools of Change 2004). The average annual savings associated with those measures are derived from ORNL Evaluation, June 2005 and U.S. Department of Energy.

B. CLASSROOM CONNECTION PROGRAM

Description

The Classroom Connection program educates elementary school students in the value and importance of energy efficiency and teaches them ways they can save energy in their own home.

A Trico Representative conducts an age-appropriate learning session during classroom time to teach the students ways to conserve energy and how to choose energy efficient appliances. A "Super Energy Savers" information sheet and an "Energy Saver Checklist" are distributed to all students.

Trico visited the following Schools and gave the "Let's Save Energy" presentation to a total of 400 4th graders.

Date	School	Number of Students	Number of Surveys Returned
10/7/2011	Robles Elementary School	85	66
10/18/2011	Sahuarita Intermediate School	240	131
11/7/2011	Lawrence Intermediate School	75	15

Students were shown basic energy savings measures and informed about the benefits of saving energy. Students were provided with an energy savings survey to fill out with their parents. All students that filled out and returned the survey received a keychain flashlight. 212 completed surveys were returned to Trico between the three schools.

Note: For the calendar year 2011, the number of students participating in the Classroom Connections Program exceeded the pre-determined program goals by 531 students (Jan. – June: 531, July – Dec: 400).

Classroom Connection Predetermined Goals, Objectives and Savings Target

Predetermined Estimated DSM Annual Demand and Energy Savings Goals			
DSM Program	Units/yr	kWh/yr saved	kW/yr saved
Classroom Connection	400	40,426	10.39

Customer Participation

DSM Program	Units
Classroom Connection	400

Costs

DSM Program	Admin	Rebates	Monitoring
Classroom Connection	\$1,812	0	0

Evaluation and Monitoring Activities*

DSM Program	Units	Surveyed	Consumption Analysis
Classroom Connection	400	212	N/A

Savings

DSM Program	Units	kWh saved	kW saved
Classroom Connection	400	40,426	10.39

Benefits and Net Benefits in Dollars

DSM Program	kW Benefits	kWh Benefit	\$ Benefit
Classroom Connection	10.39	40,426	\$2,345

Program-specific Performance Incentive Calculations

DSM Program	Performance Incentive Calculations
Classroom Connection	No Performance Incentive for this program

Problems Encountered and Proposed Solutions

DSM Program	Problems & Solutions
Classroom Connection	None at this time

Program Modifications

DSM Program	Modifications
Classroom Connection	None at this time

Program Terminations

DSM Program	Terminations
Classroom Connection	None at this time

*See note below in regard to the Evaluation and Monitoring Activities for the Classroom Connection Program:

In the absence of survey information to determine the proportion of students who influence their families to take action Trico used data from a case study of a recycling education program in a Toronto, Ontario, elementary school (Tools of Change, 2004). A survey distributed to the parents indicated that 25 percent of the students' families made substantial changes in their recycling habits as a result of the education program. To be conservative, we divided the 25 percent in half to reflect the fact that the Toronto program was designed to directly involve parents in their children's activities, while the Classroom Connection did not.

The average savings associated with the actions taken is derived from an Oak Ridge National Laboratory (ORNL) study that examined the energy savings associated with a large number of possible home weatherization activities (Schweitzer and Eisenberg 2002). The average annual savings associated with those measures are 0.104 kW.

Multiplying the proportion of students who influence their families to take action (.125) by the average savings associated with the actions taken (.104 kW) yields an energy-savings coefficient of 0.013 kW per student taught.

C. OPERATION COOL SHADE TREE-PLANTING PROGRAM

Description

Trico offers Operation Cool Shade in partnership with the Pima County Master Gardeners. Operation Cool Shade promotes energy conservation through the planting of low-water use shade trees. Small (five-gallon) Desert-adapted trees are provided to members at heavily discounted rates and members are instructed to plant the trees on the south, west and east sides of the homes with the objective of providing summer shading. When mature, the trees reduce Trico's summer cooling loads and reduce the individual member's electric bill.

Members attending tree-care classes are instructed on how to plant their trees for maximum energy efficiency as well as appropriate distances from structures. The Member also receives information about safely pruning the trees to decrease winter shading as well as information regarding tree maintenance and the removal of ground debris to reduce fire danger.

In 2011, Members could purchase up to three trees. For the period July 1, 2011 – December 31, 2011, 562 Trico Members have purchased a total of 1,585 trees. These trees were picked up by Trico Members at Trico's Annual "Tree Day" held on November 5, 2011.

Note: For calendar year 2011 the Operation Cool Shade Tree-Planting Program exceeded the pre-determined program goals with 85 additional trees distributed to Trico members.

Operation Cool Shade Predetermined Goals, Objectives and Savings Target

Predetermined Estimated DSM Annual Demand and Energy Savings Goals			
DSM Program	Units/yr	kWh/yr saved	kW/yr saved
Operation Cool Shade Program	1,500	558,000	225

^{*}Based on mature tree benefit estimation

Customer Participation

DSM Program	Customer Participation
Operation Cool Shade Program	1585

Costs

DSM Program	Admin	Rebates	Monitoring
Operation Cool Shade	\$10,258	\$2,549	0

*Evaluation and Monitoring Activities

DSM Program	Units	Surveyed	Consumption Analysis
Operation Cool Shade Program	1585	N/A	N/A

Savings

DSM Program	Units	kWh saved	kW saved
Operation Cool Shade Program	1585	90,032	36.22

Benefits and Net Benefits in Dollars

DSM Program	kW Benefits	kWh Benefit	\$ Benefit
Operation Cool Shade Program	36.22	90,032	\$6,182

^{*}Based on immature tree benefit tree estimation

Program-specific Performance Incentive Calculations

DSM Program Performance Incentive Calculation	
Operation Cool Shade Program	No Performance Incentive for this program

Problems Encountered and Proposed Solutions

DSM Program	Problems & Solutions
Operation Cool Shade Program	Problem: Not all trees provided are listed in the SMUD Tree Benefit Estimator. Solution: The Desert Southwest Community Tree Guide is a local resource used by Tucson Clean & Beautiful for tree benefit estimation. Problem: The tree benefit estimations set forth in the Desert Southwest Community Tree Guide takes into account the maturity of the tree in its savings calculations unlike the SMUD Tree Benefit Estimator and therefore has yielded a smaller Benefit than anticipated. Solution: Trico will revise its annual kWh and kW savings estimates to reflect the maturity of the trees planted.

Program Modifications

DSM Program	Modifications
Operation Cool Shade Program	Trico will revise its annual kWh and kW savings estimates to reflect the maturity of the trees planted now that it's using the Desert Southwest Community Tree Guide estimates.

Program Terminations

DSM Program	Terminations
Operation Cool Shade Program	Program change for 2012-2013. See Trico's 2012-
•	2013 Electric Energy Efficiency Implementation
	Plan (Docket No. E-01461A-11-0230) for details.

^{*}See note below in regard to the Evaluation and Monitoring Activities for the Operation Cool Shade Program:

Trico maintains detailed records on the number and types of trees sold. Random on-site tree audits are also conducted to verify that the trees are planted in the appropriate location for energy savings.

Trico planned to use the APPA Tree Benefit Estimator developed by Sacramento Municipal Utility District (SMUD) to quantify and track the benefits of planting shade trees. Trico learned that Tucson Clean and Beautiful, which administers Trees for Tucson, refers to the Desert Southwest Community Tree Guide to calculate the savings and benefits of Tucson Electric Power's Tree Program. This Guide adjusts values for local planting projects resulting in a more accurate evaluation method for Operation Cool Shade.

D. PIMA COUNTY WEATHERIZATION PROGRAM

Description

Trico provided \$10,000 in funding to the Pima County Weatherization program on November 17, 2011 to improve the energy efficiency to qualifying homes in the Trico service area. The goal is to assist low-income residents in reducing energy use and lowering their utility bills by implementing year-round weatherization measures. This program is provided at no cost to eligible customers. As of December 31, 2011, the Pima County Weatherization program spent \$4,473 of the \$10,000 provided.

To qualify for the program, the applicant must contact Pima County for an application. Eligible applicants must have a household income less than 150 percent of the federal poverty level. Program participation is subject to funding availability.

Pima County representatives determine the work needed and install weatherization measures on approved homes and structures, including:

- Caulking & weather-stripping
- Insulation (attic, wall, & duct)
- Water heater insulation & exposed pipe wrap
- Attic ventilation
- Sunscreens
- Paint roof & exposed ducts white
- Service evaporative coolers
- Replace evaporative coolers or motors with two-speed motors
- Plant trees on south/west exposures
- Installation of evaporative cooler thermostat
- Installation of low-flow shower heads

Pima County Weatherization Predetermined Program Goals, Objectives and Savings Target

Predetermined Estimated DSM Annua	al Demand ar	nd Energy Savings	Goals
DSM Program	Units/yr	kWh/yr saved	kW/yr saved
Pima County Weatherization Program	2	2,134	.55

Customer Participation

DSM Program	Units
Pima County Weatherization Program	5

Costs

DSM Program	Administrative	Rebates	Monitoring
Pima County Weatherization Program	\$51	\$10,000	0

Evaluation and Monitoring Activities

DSM Program	Units	Surveyed	Consumption Analysis
Pima County Weatherization Program	5	0	0

Savings

DSM Program	Units	kWh saved	kW saved
Pima County Weatherization Program	5	5,335	0.42

Benefits and Net Benefits in Dollars

DSM Program	kW Benefits	kWh Benefits	\$ Benefits
Pima County Weatherization Program	0.42	5,335	\$240

Program-specific Performance Incentive Calculations

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DSM Program	Performance Incentive Calculations	
Pima County Weatherization Program	No Performance Incentive for this program	

Problems Encountered and Proposed Solutions

DSM Program	Problems & Solutions
Pima County Weatherization Program	None at this time

Program Modifications

DSM Program	Modifications
Pima County Weatherization Program	Increase the amount of program dollars from \$4,100 to \$10,000 for 2011 and formalize under the 2012-2013 Electric Energy Efficiency Implementation Plan (Docket No. E-01461A-11-0230).

Program Terminations

DSM Program	Terminations
Pima County Weatherization Program	None at this time